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WHAT IS AN AUTHORITY IN LANGUAGE?

THE question often arises in respect to certain forms or uses of language, "What is your authority for that?" And by "authority" is generally understood an acknowledged precedent, an act or judgment deemed worthy of being followed; or, it may be, the speaker or writer whose words are regarded as conclusive on the point in question. Now, it is well known that what one person may consider good authority, another not unfrequently regards as of no account. For example, Noah Webster, in his English Grammar of 1831, holds that the form *you was* is correct, and adduces, in support of it, certain passages from Boswell, Dodd, Pope, Gay, Judge Parker, and others. There are multitudes, however, who regard the great lexicographer's words and citations on this point as of no weight whatever.

The difficulty that often arises of deciding satisfactorily as to the propriety or correctness of some particular phrase, word, construction, pronunciation, or whatever else it may be, is owing to various reasons. Language is a growth. As such, it

is constantly changing. New words and forms of speech, new meanings and uses of old words and forms are coming in, while old ones are dropping out. One's knowledge of his own speech is also a growth. Moreover, the facts of every living language, and especially of the English language, are continually changing. And where they are not, they can hardly be said to have been even yet, except in very few departments, thoroughly collated and systematized. On many points, scientific accuracy or certainty is far from having been attained. Again, many things in language are rather matters of taste than otherwise; and each in deciding respecting these will be governed by his own preference or taste, rather than by anything else. Thus different persons will be led to different conclusions and uses. Not unfrequently, too, the analogy of the language is mistaken, or is supposed to correspond to that of some other, when it does not. Under these and other circumstances that might be mentioned, it is not strange at all that the propriety of one and another point should often be doubted, and a good reason therefor be demanded. Still, the question reverts, What is a good reason? What ought to be conclusive?

It is generally conceded that men of learning, eminence, and acknowledged ability, if anybody, ought to be able to speak authoritatively on subjects pertaining to their respective vocations or specialities. Hence, when one desires to know the truth in regard to any questionable point within the range of the supposed acquaintance or familiarity of such persons, he naturally appeals to them, and generally accepts their opinions as conclusive. If, however, he finds that they differ in their views, or in the positions they take, he naturally enough asks, in the language of Pope,

"Who shall decide when doctors disagree?"

Perhaps, in such a case, no one can. And so it often is in questions pertaining to language.

Still, in the great majority of cases, one or more precedents of some sort may be furnished. The only question may be, Are they authoritative? On this point we desire to offer a few words.

An authority in its nature may be either direct or incidental. Any argument, however short, that is designed to substantiate

a questionable point, may be considered a direct authority, more or less conclusive. It was designed to be such. An incidental authority, however, is any expression, phrase, word, or use of words, employed by a speaker or writer in giving utterance to his thoughts, to which reference may be made by others in support of their view or position. Thus, Worcester and Webster are direct authorities for pronouncing the word *either ea-ther*, while Wendell Phillips and Anna Dickinson may be said to be incidental authorities for pronouncing it *i-ther*. The former, as orthoepists, pronounce in favor of *ea-ther*, and against *i-ther;* while the latter, as public speakers, in their utterance of the word, say *i-ther*. In general, all other things being equal, the direct authority is the weightier of the two. It is a judgment as to a special point supposed to be deliberately given, after mature consideration, by one competent to decide intelligently and candidly.

But, whether the authority be direct or incidental, there are certain things necessary to make it an authority. It is essential, in the first place, that it proceed from an acknowledged scholar, one whose words may be admitted to constitute the precedent sought. No uneducated speaker or writer, however popular, or however much his utterances or writings may accord with acknowledged good usage, can be appealed to as an authority in language. To be an authority, one must be known to be, if a writer on language, a master of that department of which he treats, or, if not, a generally chaste, correct, and idiomatic writer. And yet the obvious errors of such a writer, —as, for example, Addison's *different to* (*Spectator*, No. 15), and Macaulay's *furtherest* (*Miscel.*, Vol. IV., p. 393)—cannot be appealed to as precedents. The very authors of these errors would readily repudiate them if their attention could be called to them. Nor yet should the eccentricities of those who otherwise might be appealed to as authorities, be regarded as worthy of following. Of this nature, for example, are Carlyle's peculiarities of style, and such suggestions as that of Goold Brown, respecting the possessive plural of the word *sheep;* namely, to write it, contrary to all analogy, with the apostrophe after the *s*, and not as the possessive singular is written. Nor is a writer, whatever may be his attainments in other departments than language, necessarily an authority here. Dean Alford's judg-

ment, for example, as a commentator of New Testament Greek, may be appealed to as of weight; but, in pleading for the propriety of such forms as "It is me," and "Two and two is four" (*Queen's Eng.*, pp. 154, 218), he is out of his proper sphere; his utterances are mere words. Moreover, inasmuch as language is continually undergoing changes, that which may be an authority at one time, is not necessarily such at another.

The writers or speakers, therefore, who may be regarded as authorities in language are such as have devoted more than ordinary attention to the subject, either as a branch of knowledge, or as the medium of their own utterances, whose diction or judgment is generally correct, free from eccentricity or prejudice, in harmony with the analogy of the language, and in accordance with what may be regarded the correct usage of their day.

S. W. W.

WORDS OF CONTRADICTORY MEANING.

HOW COME THEY?

FEW young teachers of grammar realize that all words are originally nouns. Certainly every verb is a noun, the *name* of *one thought*, abstract or concrete, with the added idea of *do*ing. Thus *do*, meaning no particular form of action, is generic, embracing every form. Thus *do* (which becomes *to* in the Infinitive mood), may be used appositionally with any other verb. Fewer still understand how the same noun-verb acquires conflicting and even opposite meanings. And yet the process is natural and accords perfectly with the genius of our language,—perhaps of all languages.

A verb active differs from a neuter verb only in having within itself a connective power, a prepositional function. This internal preposition is usually *to*, often *from*, and occasionally some other preposition. Thus, "I hit him" means I did a hitting *to* him. But "I weeded the onions" means I did a weeding *from* the onions. A noun—any noun, as love, hate, run, walk, weed, hit, etc.—when it becomes a verb, simply assumes a predicating

power, the power of the generic verb *do*. Thus ***run***, as a verb, means *does run* (=agit cursum); *love* means *does love* (=agit amorem, etc.). And now when this love-doing or run-doing is to be limited objectively the verb is active or neuter according as it omits or uses a preposition after it. Thus "hit" is active in "He hit me," but neuter in both "He hit *at* me" and "He hit *to* me," if usage allowed the last expression. And usage does allow both, *He attained his majority* and *He attained* TO *his majority* on the 3d inst. These two sentences, though logically identical, are grammatically different. The verb *attained*, is active in the one and neuter in the other. In *John loves me* and *John runs to me*, "me" limits both verbs alike and thus bears the same relation to each. Yet "loves" is active and governs "me," as all grammarians would say, while "runs" is neuter and does not govern its "me." That is, the one is limited immediately by "me" and the other mediately, through the preposition "to." And yet "me" is the end or terminus alike of the loving and of the running. Some verbs use other prepositions, as, John laughs *at* me,—smiles *on* me, etc. Here "me" is with each verb the "terminus ad quem" or external limitation of that verb, exactly as in John loves me,—hates me,—strikes me, or—comes to me, or as in the equivalent noun expressions, John's love,—hatred,—striking,—or coming *is* TO *me*, ENDS *with me* as its goal. For *end* is the noun-meaning of *to*.

Now it is true in English, if not in all languages, that the noun-verb, if active (if governing), takes to itself the power of the preposition *to* or *from*, and means *do-to* or *do-from*, that is, *to-furnish with* or *to-deprive of*, the thing named by the verb, according as that thing is good or bad, desirable or undesirable. Thus to *seed* a plot of ground is to *do seeding* (put seed) TO (in) that ground. But to *weed* the same plot is to *take the weeds from* the ground. As the same thing is in some relations good and in others bad (sometimes desirable and sometimes undesirable and injurious), the very same noun-verb may normally and naturally come to have opposite meanings. Thus *let*, whose noun-meaning was the gate or sluice-stop of a mill-race, was first used as a verb in the good sense, that of supplying or furnishing. When Paul says, "Ofttimes I purposed to come unto you, but WAS LET hitherto," he means that this sluice-

gate was furnished or shut down before him, and thus his way to them was blocked up, and his going prevented. But now-a-days, to LET a man do a thing is to *lift* the gate and remove obstructions. The verb "let" has reversed its original meaning.

The word *string* furnishes, perhaps, the best illustration in our language of this tendency to opposite meanings in the use of a noun-verb, while the noun itself remains unchanged. *String* is a noun, the mere name of a small cord. But add to it the do-power, or verb-function, and then it means both to *furnish with* a string, and also to *deprive of* its strings. We all so use it, not only without hesitation or the slightest confusion of thought, but so natural and so normal is this double use that, when we want the one meaning, whether the good one or the bad one, whether the *do*ing or the UN*do*ing, the other meaning never occurs to us. Thus, I bought some beads and strung them for my daughter,=furnished them with a string, without which they would have been useless to her; and then, I bought some beans, and strung them for the cook,=disfurnished them of strings.

A noun, then, usually becomes a verb in the sense of furnishing with the thing named; as, To sand a newly-written paper. But sometimes the noun-verb means to *deprive of* the thing named by the verb; as, To dust the furniture. MONROE.

Bloomington, Ind.

POPULAR education is steadily gaining strength in Egypt. The number of children receiving public instruction has increased from 3,000, in the time of Mohammed Ali, to 60,000 in the first years of the period of 1863–72. The obstacles in the way of public education are, however, great and exceptional in Egypt. Among the 89,893 scholars now in the primary schools, there are only 3,018 girls, all, or most of whom, are of non-Mussulman families. Thus one-half of the population of Egypt is, or has been until now, beyond the influence of education, it being one of the dogmas of the East that women are not worthy of the blessings of education. The Khedive proposes to establish, at Alexandria, a great public school for children of all nationalities, at an expense of $65,000.

SQUASHIPOTENCE.

WHO has not noticed, as he walked the paved street of a city, where some old elm stands sturdily up, with a century on its shoulders, how the roots have heaved the solid flagging into a little mound about its trunk? Everybody sees it, but few stop to think what mechanical power is there, and where it comes from. Can the atoms that go along the slender rootlets of a tree so crowd and force their way under heavy stones as to compel them to rise and make room for the persistent little builders? You would say they would sooner turn aside in mellow earth, and make lateral growth, where the conditions for upward extension were so onerous.

I once saw a genius—sinister—the student of three learned professions, actually hew into the tendon-like brace of a splendid elm, to give room for a cap-stone of his wall to lie level. It did lie level that year; but now, years later, it stands tilting at an angle of forty; the noble tree, with better head and a more vigorous sap in it, has quietly pushed off the impertinent incumbrance, and healed the wounds of folly.

A vague reminiscence comes to me, to the effect that I have seen where a walnut, hidden in the central aperture of a discarded mill-stone, had grown and become a tree, taking up the mill-stone on its gnarled knees, clean from the ground; and if this is only a dream transferred to consciousness, the fact still remains of a tremendous power in vegetable growth. The English ivy, fastening to the walls of ancient ruins, inserts its slender rootlets between the stones, and slowly heaves them out of their beds, and holds them in its own strong arms, till in their decay they all crumble down together.

While I write this I am told of a strong cement drain-pipe crushed by a growing root that had clasped it in its inflexible fingers, and the pressure must have been immense, for the circular form of the pipe insures great resistance. From such casual illustrations of a mighty mechanical power in the vegetable cell, philosophers have been excited to make a definite study of the subject; and to this end have instituted careful experimental tests to determine the measure of that silent force which is working all about us so imperceptibly to our unaided

senses. The learned professors of the State Agricultural College, at Amherst, made very thorough experiment last summer, taking for their purpose a gigantic species of squash; rather, they would have us believe, on account of its rapid growth than their own familiarity with the modes of manipulating that kind of growth.

After the squash was well developed, perhaps to half its normal diameter at maturity, they prepared for it a strong wooden cradle, deep as the semi-diameter of the thrifty undergraduate. Carefully depositing their young charge in this, they laid over the top a very strong iron cage, of flat bars, riveted together along and across, and conformed nearly to the shape of the inmate. At the crest of this cage was a heavier bar set on edge to serve as fulcrum to a long, heavy lever, of which the short end was secured by a link and ring-bolt to the floor. The long end of this bar was graduated like the bar of the steelyard, to a weighing capacity of two and a half tons! It is evident the college men must have had *some* experience in the obduracy of their subject, to make preparations for such power of resistance. But even with all their experience in educational difficulties, they could only underestimate the intractability of a squash when brought to the ring-bolt. The stubborn thing grew and grew, and thrust its pulp through the interstices of the cage, and heaved away at the great lever more and more day after day, and week after week, now lifting sixty, and now a hundred pounds, and then two, three, four, five hundred; and then thousands, till at five thousand pounds, which it sustained for ten days, it broke the cage, or so bent its bars as to prevent further determination of its power.

Now that was a squash worthy of a college diploma! It was graduated with honors. No wonder Professor Seelye declared that he stood in awe before it. It *was* awful; it was sublime; it was dreadful! Such a tremendous power as that, latent in the cells of the mildest of vegetables! What if the whole squash and pumpkin world should break into revolt, one day, who is to stand before its immeasurable force? In that awful crisis, we shall regret, too late, that our colleges ever lent their educational appliances to the task of letting our squashes know their strength! It is bad enough with our bumpkins; but to wrestle with them spelled with a *p*, and with all our iron

bars and repressive clogs, to get beaten then, bodes peril to the Constitution, and that great corner-stone of our liberties, the Thanksgiving dinner! Who will dare, henceforth, to feast and make merry at the expense of that blind, hairless Samson, who can lift two tons and a half without swink or sweat?

What a fine illustration is presented, in this experiment, of the power of persistent effort, little by little, and steadily held to a fixed purpose. I think that squash might furnish "heads" for more than one discourse, which would be very encouraging to hearers whose heads were not of the same genus.—*Geo. S. Burleigh in N. E. Jour. Ed.*

*HOW TO TEACH.**

ARITHMETIC.

MENTAL ARITHMETIC.

THE character of the examples to be given in this grade is suggested by the exercises in Written Arithmetic. The same processes and forms of analysis should be employed in both. In connection with the commonly-used tables of weight, measure, etc., should be given such questions as, "In $\frac{3}{8}$ of a pound of sugar, how many ounces?" "18 quarts are what part of a bushel?" etc., etc.

WRITTEN ARITHMETIC.

Federal money should also form a part of the regular work of this grade at least once a week, and should be frequently reviewed.

Particular care should be taken in the selection of examples that no one of them be so intricate and prolix as to consume a large amount of time, without affording sufficient exercise of thought in the application of arithmetical principles.

Too much importance, nevertheless, can scarcely be given to the requirement of "practice for *rapidity* and *accuracy*" in Federal money, as well as the simple rules of arithmetic. To

* From "How to Teach," by the New York City School Superintendents.

this should invariably be assigned a brief portion, at least, of the time given to every lesson in this subject. No part of the arithmetical discipline has a higher utilitarian value, whether for the purposes of practical life, or for progress in the more advanced portions of the study; for nothing is more discouraging to the pupil than to find that, in any exercise involving other than a few figures, his results are almost always incorrect, from a want of habitual accuracy in performing the simple combinations involved in the elementary rules. Teachers are, therefore, especially advised to employ every variety of proper stimulus to make the exercises for this purpose thorough and effective.

For general suggestions, see the preceding grade.

COMMON FRACTIONS.

No part of the study of arithmetic is of more importance than the subject of fractions. When properly taught, their value, as a mental discipline, is of the highest order. When taught merely, or chiefly, by memorized formulæ, called "rules," they are, for the greater part, a waste of precious time.

No principle should be presented until the pupil is about to make use of it, and no definition should be given or required before the ideas which it embodies have been deduced, and clearly presented by preliminary illustration and questioning.

No rules should be given until a sufficient number of examples for practice have made them a succinct statement of principles previously understood, or the results of the application of principles, rather than mere mechanical formulæ for working.

In teaching the fundamental principles of fractions, the objective process is indispensable.

The most effective method of treating the subject as a whole, is to give first a very simple *outline course* of exercises, covering all the essential principles, but, by means of examples, requiring only small numbers for their solution. Such examples, though readily solved mentally, after some practice, should, in *the first stages*, be wrought upon the slates, in order to secure correctness in notation, and to allow the pupil more easily to give the necessary analysis without the additional mental tax required by the effort to retain the numbers.

In the written exercises, pupils should use the signs of operation, + − × ÷, and the sign of equality, to indicate the work performed, and its result.

This outline should then be followed by a *full course*, in which the substance of the first constitutes the exercises in mental arithmetic, while the written arithmetic comprises the more difficult portions of the general subject, as well as a systematic statement of definitions and rules, and practical examples, involving numbers too large to be readily retained in the memory. Such a plan, though apparently long, is, in reality, the most expeditious. The pupil soon obtains a clear, comprehensive, and connected view of the essential principles, and the expanded review which constitutes the second course will then require but little time.

SYLLABUS OF TOPICS FOR OUTLINES OF COMMON FRACTIONS.

(With Suggestions and Examples.)

I.—The *idea* of a fraction developed *objectively*.

The *equality* of the parts to be very carefully illustrated.

The *relative value* of various fractional parts, *as greater or less*, as $\frac{1}{3}$, $\frac{1}{5}$, $\frac{1}{20}$, etc.

The *definition* of a fraction. One or more of the equal parts of a unit.

The *terms* of a fraction *defined* and the *order* of *statement*.

The *notation* of fractions and *location* of terms, or *order* of *writing*.

Exercises in writing and explaining fractions.

Fractional expressions *less* than a unit.

Proper fractions defined, and examples. A proper fraction is one that is less than a unit.

Fractional expressions *equal to* or *greater than* a unit.

Improper fractions defined and illustrated. An improper fraction is one that is equal to, or greater than, a unit.

Exercises in writing proper and improper fractions.

II.—FUNDAMENTAL AXIOM I $= \frac{n}{n}$

Reduction of units to improper fractions.—*Analysis* A. (Page 152.)

Reduction of mixed numbers to improper fractions.—*Analysis* A.

Definition of mixed numbers.

Exercises in mixed numbers, *limited to small denominators.*

Reduction of improper fractions to mixed numbers.—Analysis B. (Page 152.)

III.—Reduction of fractions *to greater denominators*—or higher terms. [What may halves, thirds, etc., be changed into? $\frac{4}{8}$'s? etc.] To be illustrated objectively.

Examples with greater denominators than can readily be solved by *inspection.*

Analysis C. (Page 152.) (Begin with fundamental axiom.)

Term *Divisor* or *Factor*, with exercises in finding, by *inspection only*, a *Common Divisor* or *Common Factor*. Definition to be given.

NOTE.—Too great importance can hardly be given to this exercise of inspection. The application of the principle is indispensable in many of the arithmetical exercises in every succeeding grade. With proper training, it will become, within reasonable limits, a fixed mental habit, requiring no conscious effort.

Reduction of Fractions to Lower Terms or *Less Denominators.* —Examples—*Analysis* D. (Page 152.) Definition of "Lowest Terms."

Examples in finding what part one whole number is of another—corresponding examples in tables.

IV.—Multiple—term illustrated and defined.

Common multiple " " "

Exercises, to be solved by inspection.

Reduction to Common Denominator—use two fractions only.

Application of common multiple in reducing to common denominator.

Distinction between common multiple and common denominator.

Definition of common denominator.

" " least common denominator.

Examples in reducing to least common denominators.—*Analysis* C.

Examples involving previous reduction to lowest terms, by

inspection. Reduce $\frac{8}{10}$ and $\frac{6}{15}$ to their least common denominator.

Use of common denominator as the simple but indispensable basis for the working and explanation of Addition, Subtraction, and Division of Fractions.

V.—Impossibility of adding quantities with unlike names, illustrated: Add 3 elms and 4 oaks; add 3 trees and 4 trees= 7 trees.

In teaching the elementary principles, the subject of fractions should, as far as possible, be divested of technicalities, and be made to coincide with the acquired experience and simple notions of a child.

On this account, it is much better at first to say, *Find* $\frac{2}{3}$ of $\frac{4}{5}$, than to say, *Multiply* $\frac{4}{5}$ by $\frac{2}{3}$, or *Find* $\frac{2}{3}$ *times* $\frac{4}{5}$.

Adding things of like names.

Adding fractions of the same denominator—Examples.

Adding fractions of different denominators—Examples—*Analysis* C. (Page 152.)

Necessity of reducing to common denominator.

The numerators *only* added; why?

NOTE.—In no example give more than two fractions. The common denominator to contain not more than two digits.

Addition of small mixed numbers—Examples—*Analysis* C.

NOTE.—See that the *sign of operation* and the equality sign are not omitted. Avoid reducing to improper fractions.

Rule.—1st. See that the fractions are in their lowest terms; 2d. Reduce to common denominator; 3d. Add their numerators, etc.

Subtracting fractions of different denominators—*Analysis* C.

Rule.—1st. See that the fractions are in their lowest terms; 2d. Reduce to common denominator; 3d. Subtract the less numerator from the greater, etc.

The same examples may be used as in addition.

Questions should be occasionally varied by asking: "Which is the greater?" or "What is the difference?"

NOTE.—In mixed numbers avoid
1st. Reducing to improper fractions.
2d. The difficult case, $7\frac{1}{3}-2\frac{2}{3}$ (deferred to review).

VI.—"Multiplication of fractions" and "compound fractions" identical.

Such expressions as $\frac{1}{2}$ of $2\frac{2}{3}$, $\frac{3}{4}$ of $\frac{7}{8}$, etc., only involve the finding of a *fractional part*, and should be treated at first as such, rather than as a special kind of fractions.

It must not be forgotten *by the teacher* that from the nature and definition of a fraction, every example in fractions must involve or relate to division in some way.

There are two cases in the so-called multiplication of fractions:

1st. Where a fraction or mixed number is to be actually multiplied. In this case, the multiplier must be a *whole number*—as 3 *times* $\frac{2}{3}$, or 3 *times* $4\frac{3}{4}$.

2d. Where a *fractional part* is to be taken of *either a whole number*, or of a *fraction*, or of both; as $\frac{2}{3}$ of 17, or $\frac{2}{3}$ of $\frac{5}{7}$, or $\frac{2}{3}$ of $7\frac{1}{2}$.

NOTE.—Multiplication by a mixed number is a combination of the 1st and 2d cases.

Only in the first case should the expression "*times*" be used.

In the second case the expression "*of*" only should be used.

In the case of multiplying by a mixed number, the expression "*times*" is used for conciseness, though not logically correct. The proper expression is too cumbersome in practice—"4 *times the number and* $\frac{2}{3}$ *of the number*."

Only the two varieties of the first case, and the first two varieties of the second case should be required until the subject is reviewed.

Examples:

Multiplication OF Fractions
- 7 times $\frac{3}{8}$——Analysis as in simple ×, then B. (Page 152.)
- 7 times $4\frac{3}{8}$——Analysis as in simple ×, then B. (Page 152.)

Multiplication BY Fractions =taking part=division:
- $\frac{1}{8}$ of 24; $\frac{1}{18}$ of $24. No analysis, except reducing to lowest terms.
- $\frac{3}{5}$ of 25; $\frac{24}{25}$ of $25. *Analysis* E. (Page 152.)
- $\frac{3}{8}$ of $\frac{4}{7}$; $\frac{12}{15}$ of $\frac{4}{9}$. *Analysis* F. (Page 152.)

For rule and its origin, see *Analysis* F.

Examples to be given in the *practical form* at as early a stage as can be made expedient.

Find how many cents, or cents and mills, in a given fraction of a dollar.

Occasional examples involving preliminary reduction to lowest terms.

Rule.—1st. See that the fractions are in their lowest terms; 2d. Multiply the numerators for new numerator, and the denominators for a new denominator.

Solutions by direct *cancellation* should not be required until the review.

VII.—There are, theoretically, two cases in the *Division of Fractions:*

1st. Division OF a FRACTIONAL NUMBER by an integral number, as $\frac{3}{8} \div 7$, and $4\frac{3}{8} \div 7$; evidently identical with $\frac{1}{7}$ of $\frac{3}{8}$, and $\frac{1}{7}$ of $4\frac{3}{8}$ in the so-called multiplication of fractions.

2d. Division of any number, integral or fractional, BY A FRACTIONAL NUMBER, as $5 \div \frac{7}{8}$, $\frac{5}{6} \div \frac{7}{8}$, $8\frac{5}{6} \div \frac{7}{8}$, $8\frac{5}{6} \div 9\frac{7}{8}$.

The form of putting the questions should be varied as much as possible, so as to train pupils to select and apply the right principle and method. Sometimes the divisor, sometimes the dividend, should be first named.

"*How many times* are $4\frac{3}{8}$ contained in 9?" Use this form of questioning at least as frequently as the more technical form, Divide 9 by $4\frac{3}{8}$.

The two varieties of the first case, and the first two varieties only of the second case, should be required before the review.

Examples in Division of and by Fractions—Analysis:

The method and analysis to be by *common divisor*. The first case may also be analyzed by *Analysis* F (page 152), if desired.

The *method by inverting the divisor* is deferred to the review. See Note 1 under *Analysis* G (page 153).

Rule.—1st. See that the fractions are in their lowest terms; 2d. Reduce to a common denominator; 3d. Divide the numerator of the dividend by the numerator of the divisor.

Examples in finding what part one fractional number is of

another. Begin with integers: 5 are what part of 8? 3 what part of 11? (Analyze from the unit, 1 is $\frac{1}{8}$ of 8, 5 are $\frac{5}{8}$ of 8, etc., etc.)

$\frac{3}{8}$ are what part of $\frac{1}{8}$? $\frac{3}{8}$ are what part of $\frac{4}{5}$? etc., etc.

Practical examples:

1st Group. { If 7 yards cost $\$\frac{3}{8}$, what will a yard cost? / " 8 yards " $\$4\frac{5}{6}$, " " " " " }

2d Group. { If a yard cost $\$\frac{1}{9}$, how much can be bought for $8? / If a yard cost $\$\frac{7}{9}$, how much can be bought for $\$\frac{5}{8}$? }

3d Group. { If $\frac{3}{8}$ yard cost $5, what will a yard cost? / " $\frac{3}{8}$ " " $\$\frac{5}{6}$, " " " " " }

FORMS OF ANALYSIS FOR THE OUTLINES OF COMMON FRACTIONS.

Analysis A.—*Example.*—Reduce $5\frac{1}{2}$ to halves, or to an improper fraction:—$1=\frac{2}{2}$; $5=5$ times $\frac{2}{2}=\frac{10}{2}$; $\frac{10}{2}+\frac{1}{2}=\frac{11}{2}$.

Analysis B.—*Example.*—Reduce $\frac{15}{2}$ to units, or to a mixed number:—$1=\frac{2}{2}$; hence, in $\frac{15}{2}$ there are as many units as $\frac{2}{2}$ are contained times in $\frac{15}{2}$, equal to $7\frac{1}{2}$.

Analysis C.—*Example.*—Reduce $\frac{2}{3}$ to *ninths:*—In a unit there are $\frac{9}{9}$; hence $\frac{1}{3}=\frac{3}{9}$, and $\frac{2}{3}=2\times\frac{3}{9}=\frac{6}{9}$.

NOTE.—Avoid saying "a whole number," or "one whole number," when speaking of a *unit.*

Analysis D.—*Example.*—Reduce $\frac{12}{18}$ to its lowest terms:—By inspection the greatest common divisor is 6; hence it may be reduced to *thirds:* $\frac{6}{18}=\frac{1}{3}$; hence there are as many *thirds* as $\frac{6}{18}$ are contained times in $\frac{12}{18}$, or *two*-thirds—$\frac{2}{3}$.

Analysis E.—*Example.*—Find $\frac{3}{8}$ of 25. $\frac{1}{8}$ of 25 is $3\frac{1}{8}$; $\frac{3}{8}$ of 25 are 3 times $3\frac{1}{8}=9\frac{3}{8}$; or (using as a basis the *Axiom* $\frac{3}{4}$ of a unit$=\frac{1}{4}$ of 3 units; $\frac{3}{4}=\frac{1}{4}$ of 3, first *illustrating* objectively by lines divided into parts), $\frac{3}{8}$ of $25=\frac{1}{8}$ of 3 times $25=\frac{1}{8}$ of $75=9\frac{3}{8}$. The former process is, in many respects, preferable.

Analysis F.—*Example.*—Find $\frac{3}{4}$ of $\frac{5}{7}$. (First, as a basis, show OBJECTIVELY that $\frac{1}{2}$ of $\frac{1}{2}=\frac{1}{4}$; $\frac{1}{2}$ of $\frac{1}{3}=\frac{1}{6}$; $\frac{1}{3}$ of $\frac{1}{4}=\frac{1}{12}$, etc., etc.) $\frac{1}{4}$ of $\frac{1}{7}=\frac{1}{28}$; $\frac{1}{4}$ of $\frac{5}{7}=5$ times $\frac{1}{28}=\frac{5}{28}$; $\frac{3}{4}$ of $\frac{5}{7}=3$ times $\frac{5}{28}=\frac{15}{28}$.

NOTE 1st.—Make the same question "practical," and apply the same analysis. If a yard cost $\$\frac{5}{7}$, how much will $\frac{3}{4}$ of a yard cost? It will cost $\frac{3}{4}$ of $\frac{5}{7}$ of a dollar, etc., etc., as before.

NOTE 2d.—*After* a few simple examples have been carefully analyzed, point out the numerical relation of the numerator and the denominator of the product to those of the factors, and *then, not before*, deduce or give the following

Rule for *the Multiplication of Fractions:*

1st. See that the fractions are in their lowest terms; 2d. Multiply the numerators for the numerator of the product; and multiply the denominators for the denominator of the product.

Analysis G.—*Example.*—If a yard costs $\$\frac{3}{8}$, how much can be bought for $\$\frac{7}{9}$?

(See *Analysis* B, 5th Grade, to be combined with reduction to Common Denominator.)

If a yard cost $\$\frac{3}{8}$, $\$\frac{7}{9}$ will buy as many yards as $\$\frac{3}{8}$ are contained times in $\$\frac{7}{9}$, or, reducing to Common Denominator, $\frac{3}{8}=\frac{27}{72}$, $\frac{7}{9}=\frac{56}{72}$, as many yards as $\frac{27}{72}$ are contained times in $\frac{56}{72}$, or $2\frac{2}{27}$ yards.

NOTE 1st.—To "invert the divisor and proceed as in multiplication," is much more concise as a method, but it is not in any sense an *analysis*, but a condensed and valuable *rule*, which is to be both taught and analyzed in the review. When this concise rule is taught before the analysis by reducing to a common denominator, the teacher will usually find three undesirable results: first, the pupils are as likely to invert the wrong fraction as the right one, unless the question is always put in one particular way, and even then, until after much practice; thus showing that they are not guided by any principle; second, they cannot explain the process; and third, it is then much more difficult to teach the analysis, because their minds are preoccupied by the brief rule, which naturally seems to them so much more desirable, as it costs little or no mental effort.

As the study of fractions is an important mental discipline, any course which practically excludes the fundamental principle of division by a fraction should be carefully avoided.

NOTE 2d.—It will be perceived that the analysis of the division of one fraction by another, by the process of reducing to a common denominator, is essentially identical with the analysis of reducing an improper fraction to a whole or mixed number.

Analysis H.—*Example.*—If $\frac{1}{4}$ of a yard cost $\$\frac{3}{8}$, what will a yard cost?

(See *Analysis* C, in 5th Grade, with which the following is essentially identical.)

If $\frac{1}{4}$ of a yard cost $\$\frac{3}{5}$, $\frac{1}{4}$ of a yard will cost $\frac{1}{4}$ of $\$\frac{3}{5}$ (note that this division by the numerator is the vital step in the process), which is $\$\frac{3}{20}$; and a yard, or $\frac{4}{4}$, will cost 7 times $\$\frac{3}{20}$, or $\$\frac{21}{20}$, equal to $\$1\frac{1}{20}$.

NOTE 1st.—This is one of the most important analyses in the entire range of the arithmetic of the grammar-school grades. If neglected, or badly taught, it seriously deranges the work of the teachers of more advanced grades, where it must be so frequently applied. If the teacher will present it immediately *after*, and then *in connection with*, a review of *Analysis* C, in the Fifth Grade, and dwell particularly upon the *step noted in parenthesis*, a great part of the difficulty in fixing the entire process will disappear.

NOTE 2d.—It is, of course, understood that the examples given to the class will not be confined to yards and dollars. Even the order of these should be at times inverted; as, in the problem last treated, we might have

If $\$\frac{3}{5}$ purchase $\frac{1}{4}$ of a yard, how much will a dollar buy?

SYLLABUS OF TOPICS FOR EXPANDED REVIEW OF COMMON FRACTIONS.

I.—Systematic *Review of Definitions* of terms used in fractions, *with illustrative examples*. Omit complex fractions having fractions in the denominator. Complex fractions having an integral denominator, such as $\frac{2\frac{1}{3}}{5}$, read $2\frac{1}{3}$ fifths, are to be "reduced to higher terms." See *Analysis* C, page 152. The multiplier to be used is evidently the denominator of the fraction found in the numerator. All other cases of "complex fractions," so-called, should be treated as *indicated division*. Such expressions as $\frac{7\frac{1}{4}}{9\frac{3}{5}}$ are not to be explained as fractions. A unit cannot be divided into $9\frac{3}{5}$ *equal* parts.

Examples in finding the Greatest Common Factor of numbers by inspection.—Mental.

Examples where the factor *cannot* be readily found by inspection, as 292 and 365;—315 and 572. The SPECIAL METHOD required is too difficult for *analysis* in this grade. It is one of the few points to be taught *empirically*.

The result always should be tested or proved in accordance with the definition of Common Factor or Common Divisor.

II.—*Reduction of Fractions to their Lowest Terms.*

Examples to be reduced by inspection; $\frac{1200}{1800}$, $\frac{840}{1260}$, *Analysis* D, page 152.

Examples involving the special method of finding the Greatest Common Factor; as $\frac{888}{1665}$, $\frac{315}{1113}$, etc., etc. Not too long.—*Analysis* D, page 152.

Reduction of Improper Fractions and Mixed Numbers.

1st. Examples solved mentally or by inspection.

2d. Examples with larger numbers.—*Analysis* A and B.

Examples in finding the Least Common Multiple of two or more numbers—and definition.

1st. By inspection, as 5, 3, 2; 10, 20, 30.

2d. When not readily solved by inspection, as 28 and 39; 72, 25, 88; 6, 12, 18, 24, 36, and 48.

Statement of method or rule.

Relation of Least Common Multiple to Least Common Denominator.

Distinguish carefully between the two, and define each.

Examples in reducing to Least Common Denominators.—*Analysis* C.

Give occasional examples involving preliminary reduction to lowest terms by inspection.

III.—*Analysis* C. *Examples in Addition of Fractions and of Mixed Numbers.*

Say "*Reduce to Least Common Denominator*," rather than, "*Find the Least Common Multiple of the Denominators.*" Of course the latter forms a *part of the process* of the former.

Examples in Subtraction; as, $\frac{7}{15}—\frac{5}{17}$; $87\frac{1}{8}—29\frac{19}{36}$. Do not allow reduction to improper fractions.

Make both kinds of examples as practical as possible.

Practical Examples (not too long), each involving both addition and subtraction.

NOTE.—Teachers should remember, that arithmetic is not only a *science*, but also a practical *art;* that this art involves important *devices*, many, or most, of which have been already taught, and their principles

explained. These devices, such as reducing to lowest terms, cancellation, rejecting terminal o's of a divisor, should not be at any time lost sight of. Examples should be occasionally given of such a character as to require these devices. The omission or neglect of these important matters would be a serious defect in the character of the instruction given.

Principle of *Cancellation.*—Show its *identity* with dividing by *common factors*, and with *reducing to lowest terms.* Show this by examples in fractions.

Examples of simple applications of cancellation to whole numbers.

IV.—*Multiplication of Fractions.*

Give examples where cancellation cannot be applied.—*Analysis* F.

$\frac{18}{19} \times 3\frac{1}{25}$; $\times \frac{13}{11}$; $\frac{11}{25} \times 144$; $16\frac{3}{8} \times 12\frac{1}{4}$; abstract and *practical.*

Give examples that should be done by cancellation.—*Analysis.* Lowest terms.

$125 \times \frac{4}{15}$; $\frac{24}{36}$ of \$17.38;—if 39 barrels cost \$84, what will 26 barrels cost?

If a ton of hay cost $\$17\frac{1}{2}$, what will $\frac{24}{25}$ ton cost?

If 1 acre cost $\$23\frac{3}{4}$, what will $19\frac{1}{11}$ acres cost?

Pupils should be made familiar with the following principle and its applications. It is frequently the most convenient method of solution. See *Analysis* E, page 152. $\frac{3}{8}$ of a number are equal to $\frac{1}{8}$ of 3 times the number, etc., etc.

$\frac{3}{8}$ of $40 = \frac{1}{8}$ of 3 times 40.

V.—*Division of Fractions.*

1st. Review and apply the method by *common denominators.*

2d. Review thoroughly its analysis. *Analysis* G, page 153.

3d. Teach carefully the following analysis, giving a variety of short examples to fix it thoroughly. See *Analysis* I, page 157.

4th. Teach the brief and useful device of *inverting the divisor*, but in no case let the analysis of the rule be forgotten. Let it be given by the pupils as often as may be found necessary to insure its retention. The teacher is again reminded of the importance of the proper application of the principle of repetition of mental effort.

Examples in finding what part one number is of another;

as $7\frac{1}{3}$ are what part of $9\frac{1}{2}$? $\$4\frac{1}{2}$, what part of $\$7\frac{2}{3}$? $\frac{17}{30}$ what part of $\frac{2}{3}\frac{3}{5}$?—See *Analysis* I, page 157.

Give examples where cancellation cannot be applied:

$$1\frac{7}{3\,3} \div 2\frac{5}{4\,0}; \quad 13\frac{1}{3} \div 1\frac{1}{7}.$$

At $\$1\frac{1}{4}$ a yard, how many yards can be bought for $\$13\frac{1}{3}$?

If $5\frac{2}{3}$ bushels cost $\$18\frac{1}{4}$, what will 1 bushel cost?

Give examples where cancellation is to be applied:

$$23\frac{1}{3} \div 12\frac{8}{11}; \quad 21\frac{3}{7} \div 2\frac{1}{2}\frac{8}{5}, \text{ etc.}$$

Give short examples, involving simple combinations of the multiplication and division of fractions; also addition or subtraction, with multiplication or division, like the following:

Bought $7\frac{2}{3}$ yards and $3\frac{1}{3}$ yards at $\$1\frac{2}{3}$ a yard; what is cost of the whole?

Bought 36 yards; kept $9\frac{1}{4}$ yards, sold the remainder at $\$\frac{1}{4}$ a yard; how much did I get for it?

If I had sold it for $\$7\frac{1}{3}$, how much a yard would that be?

If $\frac{2}{3}$ yard cost $\$\frac{5}{7}$, what will $\frac{8}{11}$ yard cost?

If $\frac{2}{3}$ yard cost $\$\frac{5}{7}$, how much can be bought for $\$5\frac{2}{3}$?

FORMS OF ANALYSIS.

The following is the simplest form of the analysis of the important practical rule of "inverting the divisor," etc. The introductory step of using a unit as the dividend, is only a case of dividing one fraction by another.

Analysis I.—*Example.*—Divide $\frac{3}{8}$ by $\frac{5}{7}$.

(*Begin with a unit for the dividend*, and apply the principle of *common divisor*.)

1st Step.—A unit divided by $\frac{5}{7}$, or $\frac{7}{7} \div \frac{5}{7} = \frac{7}{5}$ (which quotient, it will be observed, is the *divisor inverted*).

2d Step.—Therefore $\frac{3}{8}$ of a unit divided by $\frac{5}{7} = \frac{3}{8}$ of $\frac{7}{5} = \frac{2}{4}\frac{1}{0}$.

Condensed form.—$(1 \div \frac{5}{7}) = (\frac{7}{7} \div \frac{5}{7}) = \frac{7}{5}$; therefore $(\frac{3}{8} \div \frac{5}{7}) = \frac{3}{8}$ of $\frac{7}{5} = \frac{2}{4}\frac{1}{0}$.

Example.—If $\frac{4}{7}$ of a yard cost $\$\frac{3}{5}$, how much can be bought for $\$\frac{7}{8}$?

Analysis.—Combination of H and G. Page 153.

Example.—If $\frac{4}{7}$ of a yard cost $\$\frac{3}{5}$, what will $\frac{9}{11}$ of a yard cost?

Combination of H and F.

NOTE.—Give a thorough review of Analyses F, G, and H, before attempting the above combinations.

MEMORY CULTIVATION.

A STRANGER once made his appearance at the Tuileries, and asked audience of the then reigning King of France. His request being granted, he boasted to the king of a remarkable memory, inasmuch as he could repeat a poem of one hundred lines upon hearing it once read. He was ordered to conceal himself in the apartment. Voltaire was conducted into the royal presence, and requested to read aloud the latest production of his pen. The reading being done, the king remarked that the article could hardly be original, as there was a gentleman in the palace who could repeat it verbatim. The stranger was recalled, and astonished the author by repeating the poem without a single mistake. Voltaire, in a state of great excitement, tore the manuscript into a thousand fragments, and was not particularly well pleased when he learned of the deception practiced upon him. He was glad, however, to re-write it at the dictation of the stranger, who repeated it as readily as he had at first.

Such astonishing feats of memory are deservedly rare, for so much gain in one direction must assuredly involve loss in another. Nature, without doubt, does much in this respect for individuals, but art does much more. The faculty is one susceptible of the highest cultivation; but how little is done in order to give it the right direction. Children are often injudiciously crowded and pushed, by both parents and teachers, till their memories, like a remnant store, are filled with odds and ends of all kinds, without possessing enough of any one thing to be of practical benefit. Sabbath-school pupils are often required to learn certain portions of Scripture, and many a one has been known to recite one hundred consecutive verses every Sabbath of the year.

This cramming of the memory can but be a fruitful source of mental indigestion. Teachers too often forget that line upon line, precept upon precept, is the only true method of dealing with youthful minds. They give here a little and there a little, but the weightier matters of the prophet's advice are left almost wholly unheeded. A few facts, clearly presented and often reiterated, would prevent much of the vagueness upon ordinary

topics of the day prevalent among the rising generation. Little pains are taken to cultivate a memory that shall reason from cause to effect, and draw conclusions from fixed premises; but a memory is built up upon circumstances, and every if and and becomes essential to the train of thought, so that an omission of a word in a narration or recitation necessitates a return to the beginning of the last paragraph. And if a tale is to be told, or an incident in every-day life related, it is so smothered with attendant circumstances, and so burdened with circumlocutions, that very little pleasure is derived from the recital.

St. Paul says: "I had rather speak five words with my understanding, that by my voice I might teach others also, than ten thousand words in an unknown tongue." This remark seems never to have been considered by the teachers of my early childhood, for I was required to memorize words which, to my mind, conveyed no ideas, and were no better understood than though they had been written in an unknown tongue. Many a time have I been in disgrace for being unable to recite the following definition: "Punctuation is the division of composition into sentences, or parts of a sentence, by means of pauses, which are so placed as clearly to indicate the meaning of the author." In the Sunday-school, my lot was no better. The "Assembly's Catechism" confronted me with such answers as: "The sinfulness of that state whereinto man fell consists in the guilt of Adam's first sin, the want of original righteousness, and the corruption of his whole nature, which is commonly called original sin, together with all actual transgressions which proceed from it." Imagine a child six years of age seated at such a feast of fat things, in this generation, and be not surprised that memorizing verbatim has been the one horror of my life. Had punctuation been explained to me, it is barely possible that the definition might have been committed; but as it was, I could never get beyond, "Punctuation is the division." There the recitation ended, and the disgrace began.

A truly philosophical memory is based upon an association of ideas, not upon an association of words. The story of two comedians is familiar. A wager was once made between Foote and a brother comedian, that the latter could write ten lines, which the former could not learn in as many minutes. The wager was accepted, but lost, when the following touching nar-

rative was laid before Foote: "So she went into the garden to cut a cabbage leaf to make an apple pie. At the same time, a great she-bear, coming up the street, pops his head into the shop. What! No soap! So he died, and she very imprudently married the barber, and there were assembled at the wedding the Picaninnies and the Garulilies and the Jobulilies and the grand Panjandrum himself, with the little round button at the top, and they all fell to playing catch as catch can, and they laughed and they danced till the gunpowder ran out at the heels of their boots." This illustration shows the uselessness of desultory teaching. In the cultivation of the memory, a definite plan is necessary, wherein the details are so nicely interwoven, that one shall suggest another, and thus an association of ideas be formed in the mind of the pupil.

"Lulled in the countless chambers of the brain,
Our thoughts are linked by many a hidden chain.
Awake but one, and lo! what myriads rise;
Each stamps its image as the other flies."

N. C. W.

THE LENGTH OF THE MISSISSIPPI.

MARK TWAIN has entered the domain of science. The following are some of his latest speculations: "In the space of one hundred and seventy-six years the lower Mississippi has shortened itself two hundred and forty-two miles. That is an average of a trifle over one mile and a third per year. Therefore any calm person, who is not blind or idiotic, can see that in the old Oolitic Silurian period, just a million years ago next November, the lower Mississippi River was upward of one million three hundred thousand miles long, and stuck out over the Gulf of Mexico like a fishing-rod. And by the same token any person can see that seven hundred and forty-two years from now the lower Mississippi will be only a mile and three-quarters long, and Cairo and New Orleans will have joined their streets together, and be plodding comfortably along under a single mayor and a mutual board of aldermen. There is something fascinating about science. One gets such wholesale returns of conjecture out of such a trifling investment of facts."

SWIMMING.

IT is difficult to understand why, when so many people enjoy bathing, the exercise of swimming should be so much neglected. Every now and then there is an outcry for more elaborate arrangements at bathing resorts for the protection of bathers, but it would be surely much better if bathers would only take the trouble to learn the art of taking care of themselves. It would hardly suit the spirit of the age to propose that no one should be allowed to bathe who was not provided with a certificate of efficiency in swimming, at least to the extent of a few strokes, or of floating. But there is certainly great need of more general training in this exercise. There is, we believe, a society which undertakes to teach swimming gratuitously, and we are glad to observe that the movement for extending the number of swimming-baths is making progress. The system of river-baths, with which every visitor to Paris is familiar, will help to supply an important want.

What is, however, above all, important is that swimming should be established as a regular and unfailing part of school education both for boys and girls. If the fashion were once set, it would soon be generally followed, and a school which undertook this duty would have a great superiority in the eyes of parents over those which ignored it. The necessary arrangements might be made without much difficulty, since the art may be learned in a small piece of water almost as well as in a large one. In Mr. Blackmore's well-known novel, *Lorna Doone*, there is a graphic account of the way in which Devonshire lads used to be taught swimming at a former day, which is worth quoting:

"Now the large boys take the small boys, crying sadly for mercy, and thinking, mayhap, of their mothers; with hands laid well at the back of their necks, they bring them up to the crest of the bank upon the eastern side, and make them strip their clothes off. Then the little boys, falling on their naked knees, blubber upwards piteously; but the large boys know what is good for them, and will not be entreated. So they cast them down, one after another, into the splash of the water, and watch them go to the bottom first, and then come up and fight

for it, with a blowing and a bubbling. It is a very fair sight to watch, when you know there is little danger, because, although the pool is deep, the current is sure to wash a boy up on the stones, where the end of the depth is."

The moral of the passage is contained in the remark that all the boys learned to swim, "for the greatest point in learning that is to find that you must do it;" and even boys who hated it most came to swim in some fashion when they had been flung for a year or two into Taunton pool. We do not exactly recommend this process in its rude and simple form for adoption at the present time; but it would be better for all if Englishmen were in early youth made to feel themselves quite at ease in the water, and not afraid of a good plunge. It is when young that swimming, like riding, is most readily and thoroughly learned. In each case confidence and self-possession are more than half the battle, and these are not so easily acquired in after life, when the mind has settled into a habit of timidity and distrust. It is possible that at present there is not a sufficient number of properly qualified teachers of the exercise, but it is really so simple in itself, that there would be little difficulty in supplying this deficiency. It might be less easy, of course, in some places to provide baths to practice in; but if the importance of this branch of education were once generally appreciated, the means of carrying it on would soon be forth-coming. —*Saturday Review.*

FLOATING.—Men are drowned by raising their arms above water, the unbuoyed weight of which depresses the head. Other animals have neither motion nor ability to act in a similar manner, and therefore swim naturally. When a man falls into deep water, he will rise to the surface, and will continue there if he does not elevate his hands. If he moves his hands under water, in any way he pleases, his head will rise so high as to give him free liberty to breathe; and if he will use his legs as in the act of walking (or rather walking up stairs), his shoulders will rise above the water, so that he may use the less exertion with his hands, or apply them to other purposes. These plain directions are recommended to the recollection of those who have not learned to swim in their youth, as they may be found highly advantageous in many cases.

USE OF IRON BY THE ANCIENTS.

IN Hindustan, near Delhi, there is a large, beautifully wrought iron pillar, which is a mystery to most observers. It stands erect, and bears an inscription that seems to have been made near the beginning of the Christian era; but it has stood there so long that its base has sunk into the ground nearly thirty feet. Its whole length is fifty or sixty feet, and its largest circumference is said to be five feet. It is probably older than the inscription. Its existence and antiquity show that there must have been extensive iron works in Hindustan in ancient times, and remarkable skill in working iron. Traditions of emerald and turquois mines worked by the ancients, somewhere near the Isthmus of Suez, led certain Frenchmen and Englishmen to search for these old mines. The emerald mines were found by a Frenchman. They had been worked to a vast extent. The turquois mines were found near Mount Sinai, by an Englishman. A report of the British Society of Antiquaries, on his discoveries, makes this statement: "While searching for turquois mines, came upon the remains of vast iron works, which must have employed many thousands of hands." The discoverers supposed that all these ruins were worked by the Egyptians; but it is far more probable that they were worked by the Phœnicians. According to Cæsar's Commentaries, the iron mines of the weald, in the English counties of Kent and Sussex, had been worked by the Kelts, for a long period previous to his time; and he mentions that ships were fastened with iron bolts and furnished with chain cables made of iron. The more this subject is explored, the more manifest it is, that the art of mining and working iron is by no means a modern invention, and that its beginning is extremely ancient, and as undiscoverable as the beginning of civilization itself.—*Selected.*

MARY'S DIFFICULTY.—*Mistress*—"Let you go to evening school, Mary? Why, I thought that you could read!" *Mary*—"Well, ma'am, I does know my letters fust-rate, so long's they keep in a row; but just as soon as they gits mixed up into words, I'm beat!"

THE NOISES OF EARTHQUAKES.

GREAT subterranean noises and reports resembling thunder. These occur more or less during all earthquakes. Father Kircher describes them as "a horrid sound, resembling that of an infinite number of chariots driven fiercely forward, the wheels rattling, and the thongs of the whips cracking;" Sir Hans Sloane, in Jamaica, as "a hollow rumbling noise, almost like that of thunder." At Colares, near Lisbon, in 1755, during the great earthquake, the sound is said to have been "like that of chariots, which increased till it equaled that of the roar of cannon;" and at Lisbon, "a rattling as of coaches in the street, with a frightful noise underground, resembling the rumbling of distant thunder." At Madeira, the same earthquake was preceded "by rumbling noises in the air like that of empty carriages, which died away like a peal of distant thunder." On the 16th of September, 1849, there was an earthquake at Burra-Burra, in South Australia, where the noise is said to have resembled the rolling of heavy carriages. The shock was followed by a flash of lightning that illumined the whole atmosphere.—*Popular Science Monthly.*

ONE of the most hopeful signs in Egypt is the perfect mania there at present for education. It is now the law of the land that every soldier that enters the army must learn to read and write, and the officers must learn some foreign language—either English or French. The soldiers learn to read and write in Arabic (being taught by their officers), and it is not uncommon to see 5,000 studying at once. Though the pay of a soldier is very small, at first but fifty cents a month, and after awhile only about $1, yet he is well clothed and well fed, and certainly taught to read and write, if he does not know how when he enters the service.

The mother of the Khedive supports a school where 300 girls are being educated, and there are a great many schools besides this, well provided with teachers, expressly for training girls and young women. So great is the change, it may almost be termed a revival of learning in Egypt.

EDITORIAL NOTES.

THERE are many ways to bring an institution of learning into notice. Probably the best way is to maintain an unexceptionally good school, whose every pupil and graduate will be a living advertisement to bespeak its merits and establish its claims. Among the other means employed, we can think of none more effectual than to get out a concise, attractive, and *honest* catalogue, stating the exact advantages and prospects of the school. A great mistake is made by those who consider intelligent parents incapable of seeing through the misrepresentations, evasions, and frauds that characterize the average catalogue. Entirely too transparent are the various devices for expanding the list of students, dragging in the names of big men, and flaunting a spurious array of instructors, some of whom may never have been within a gunshot of the school. Why not state honestly just what is to be given in return for the charges made?

The omissions in some catalogues sent us are surprising. Simply "Jones' Academy," without the name of town or State, is very well for those so fortunate as to have visited said academy; but without this foreknowledge, we have no idea whether the institution bearing that name is in Nova Scotia, or overlooks the Gulf of Mexico. If ashamed of the town, please give us at least the name of the State?

The typography, too, is sometimes simply ridiculous. The very worst specimen before us is styled the "Thirty-Second Annual Catalogue of Salem Academy, Salem, O." If the date, "1875," did not plainly appear, we would suppose this to be the first of the thirty-two catalogues, and sent out as a relic for the Centennial. Among the neatest specimens is the pamphlet of the University of Vermont and State Agricultural College. This was, probably, arranged by Prof. John E. Goodrich.

THE system of boating, so popular in the New England colleges for several years past, has, probably, seen its best days. Long ago, a president of one of these institutions said that if boating were compulsory, it would be regarded by students as

the greatest oppression imaginable. After every Regatta, nearly all the crews, except the victorious one, return with the determination never again to be put to such a waste of energy, time, and money. The argument that the great English universities do not tire of this sporting diversion can have no weight, since no analogy can be drawn between the habits and resources of our students and those of an Oxford and Cambridge. If our students were mostly the high-born sons of wealth and rank, with unlimited time and means, the case would be different. Undoubtedly this mushroom aquatic excitement must die out. What next?

President Hulbert, of Middlebury College, is said to regard with favor a plan which his students have for organizing a rifle team. He thinks rifle shooting would afford exercise enough, would cost less, and would have a better influence than boating.

A similar movement is on foot at the Wesleyan University. This recreation would require more skill, could be participated in by a greater number of students, and would be far less expensive. The present outlay made to prepare and maintain a respectable competition at Saratoga would probably arm an entire college with Creedmoor rifles.

DR. HOLLAND very properly advises women to remember their own sex in their gifts and wills. They have spent money enough in endowing scholarships, theological seminaries, and colleges for men. Let the girls have a chance.

THE general interest taken in the origin of the species is shown by some recent publications. The new "Encyclopædia Britannica" devotes twenty pages to "apes" and only two to "angels." An exchange remarks: "This is honest, the editor probably knowing ten times more about the former than the latter. It is pleasant to see so much attention shown to one's ancestors."

SOME New England political papers are trying to do a service to education by coining new expressions. The *Springfield Republican* says: "Judge Pierrepont has *flubbergasted* Mr. Ames," but fails to explain whether it was a surgical operation

or a legal performance. In another issue it cordially advises the *Boston Transcript* to "take a reef in its ears;" whereupon the *Transcript* remarks that, although its contemporary had no ears for anything besides the echo of its own scolding, it had more cheek than any newspaper in the country.

"A SHOEMAKER should stick to his last" is a maxim that has been exemplified in more ways than one. Gen. Winfield Scott doubted its truth, and lost the presidency, many claim, by putting himself forward before the American public as a champion stump-speaker. Whatever may be the follies of President Grant, no one seems to deny him the undisputed merit of eloquent silence. As to one of his fellow-warriors, however, not as much can be said. It is claimed that Sherman, in trying to write himself up, has certainly written himself down; that his carelessly prepared "Memoirs" will neither reward him for the trouble they bring, nor increase his reputation for fairness and prudence. They will cause him to be assigned a lower place than might otherwise have fallen to his lot among the great captains of history.

IN the following lines the word *that* is used to exemplify its various signification: "Now *that* is a word *that* may often be joined, for *that that* may be doubted is clear to the mind. And *that that that* is right is as plain to the view, as *that that that that* we use is rightly used too; and *that that that that that* line has, is right, in accordance with grammar, is plain in our sight."

THE editorship of the *National Teacher and Monthly* has changed hands. Hon. W. D. Hinkle succeeds Mr. E. E. White, who has devoted the past fifteen years to labors on this periodical. Mr. White's parting wish, that it may give no uncertain sound when public education is assailed, will be realized, we trust, while in the hands of his successor.

A CORRESPONDENT informs us that, while traveling through New England during the past year, the principals of many

schools have complained to him of a certain foreigner who has been victimizing school children in the following manner. He visits schools, and gives notice that he is a professor of elocution from a German university. By request, he will give an exhibition of his great vocal powers, ventriloquism, etc., to the teachers and pupils only, at four o'clock, P.M., admission ten cents. More than fifty teachers in as many different schools characterize the performance as a complete swindle. In some places, the money has been taken from him and returned to the children, while, in others, he has barely escaped arrest. Lately, he has been playing his game in Eastern New York, but is now claimed to have made a bee line for the West. Let the school fraternity in that section see that this philanthropic patron of learning is offered a warm reception.

AN animated election in the South School District of Hartford, Conn., has resulted in the re-election of Mr. Hugh Harbison, as chairman. The *Hartford Courant* says that Mr. Harbison "has given to the district, during his eleven years of service, a careful attention to business, and an executive ability in purchasing supplies, and in general financial management, which has been of great benefit to the district." To this statement we call special attention, because such committeemen as Mr. Harbison are exceedingly rare.

THAT suit in the Supreme Court of Brooklyn, brought by a colored man against the Board of Education, was not in vain, although the plaintiff realized nothing by it. An important decision was established as to the right of colored children to sit in white schools. Judge Gilbert sustained the action of the Board. He claims that it would be unreasonable to say that a separation of the white and black races is necessarily a discrimination against either. The parent may prefer that his child should be taught along with white children, but such preference weighs nothing against a regulation of the Board lawfully made. The power to make such regulations is essential to the welfare of pupils, both white and black, and it is the duty of the Court to uphold all such regulations when they do not subvert any legal right.

HERE is one of the latest compositions. A youngster being required to write upon some portion of the human body, selected that which unites the head to the body, and expounded as follows:

"A throat is convenient to have, especially to roosters and ministers. The former eats corn and crows with it; the latter preaches through his'n, and then ties it up. This is pretty much all I can think about necks."

ANOTHER, one written by a New Hampshire nine-year-older, is equally original:

"Wales are big fish. They have a mouth and a tale but the tale is as bad as the mouth for wen you come near he can shake it and brake the big ship. Peple can tell wales from an island, for they spout water from their nostrills. Peple get wale-bones from wales. My sister likes wale-bones 'cause they make her little."

THE President's speech before the "Army of the Tennessee" has been generally complimented. While his brief and conciliatory treatment of the old war-issues was commendable, his allusion to the importance of more thorough public instruction ought not to pass unnoticed. He believes that the Centennial year is a good time to begin the work of strengthening the foundation of the structure erected by our fathers one hundred years ago. If the public safety depends upon the intelligence of the people, the agencies for securing that condition should be provided for in the nation's fundamental law. Public instruction cannot be safe while under the control of partisan legislation. He concludes as follows: "Encourage free schools, and resolve that not one dollar appropriated for their support shall be appropriated to the support of any sectarian schools. Resolve that neither the State nor the nation, nor both combined, shall support institutions of learning other than those sufficient to afford to every child growing up in the land the opportunity of a good common-school education, unmixed with sectarian, pagan, or atheistical dogmas. Leave the matter of religion to the family altar, the Church, and the private school, supported entirely by private contributions. Keep the Church

and the State for ever separate. With these safeguards, I believe the battles which created the army of the Tennessee will not have been fought in vain."

BEYOND pecuniary considerations, the average lecturer, for the last few years, has had no other main object in view than the *entertainment* of his audience. It is not to inspire, nor to teach, but simply to please. Among the honorable exceptions to this rule must be reckoned Col. Homer B. Sprague, whose scholarly efforts are not only entertaining, but eminently instructive as well. Such themes as "Milton," "Shakespeare," and "Oliver Goldsmith" cannot be treated without awakening an interest in the lives and works of those literary giants. As previously announced, he has resigned his charge of the Adelphi Academy, and gives more attention to the increasing demands of the lecture field.

A COMMUNITY in Wisconsin has been agitated for some time by the problem: Who shall determine what pupils shall study —teachers and trustees, or parents? The court has rendered a decision in favor of the parents. Other States, however, are not bound by this decision, nor has the abstract right in the case been determined. President Bateman, of Knox College, reaches the following conclusions after his discussion of the subject:

"1. Pupils can study no branch which is not in the course prescribed by the directors (trustees).

"2. Pupils can study no branch of such prescribed course for which they are not prepared, of which preparation the teachers and directors shall judge.

"3. Pupils shall study the particular branches of the prescribed course which the teachers, with the consent of the directors, shall direct, unless honest objection is made by the parents.

"4. If objection is made in good faith, parents shall be allowed to select from the particular branches of the prescribed course for which their children are fitted those which they wish them to study; and for the exercise of such right of choice the children shall not be liable to suspension or expulsion."

CURRENT PUBLICATIONS.

TO the making of new books there seems to be no end. The active competition that prevails in the book market is causing the issue of more books of superior excellence from the presses of our great publishing houses, than was ever before known in the history of the trade, and especially is this true of school-books. Poor books must "go to the wall." No subject has stronger claims to attention, both as a means of mental development, and of useful information applicable to the daily business of life, than the arithmetic. Rarely have we been so forcibly impressed with the "new departures," and radical improvements, claimed for new issues of school-books, as we have been by those apparent in the two arithmetics of "Robinson's Shorter Course."*

The "First Book in Arithmetic" is unique, and its beautiful pages seem full of real merit. The author has happily adopted the more practical mode of teaching the child arithmetic, viz.: by combining oral methods with slate and blackboard drills. And since childhood is the *seeing* and *doing* period of life, this making the eye and hand mutual helps in acquiring knowledge is practical and philosophical.

Very little space seems given to "explanations," and we are glad of it. The development of the subject is, as it always ought to be, so natural that explanations are not required. Thus the mind of the child may grow and expand with the subject. It contains a great number and variety of the choicest methods and exercises, which will interest and attract the pupil. The pictorial illustrations are novel and artistic, and what is better, every one has a meaning which the child will catch at a glance.

"The Complete Arithmetic" is a decided advance in the right direction. It has so many commendable features that we can note but a few. The whole subject of Oral and Written Arithmetic, usually treated in *three* books, is developed and applied in *one volume*, the oral being full, and placed before the written, in each topic, where it logically belongs. We cannot

* By D. W. Fish, M. A.: Ivison, Blakeman, Taylor & Co., N. Y.

conceive why this plan, so obviously practical and philosophical, of presenting the whole subject in one portable book, instead of the old plan of elementary and higher books, has not before been adopted. The treatment of the elementary topics in this book is simple enough and complete for any grade; then why encumber the advanced pupil with the elementary material in the higher grades, especially when a single *volume* substituted for an entire *series*, must prove a great saving of *time* and *money*.

We notice much that is new and valuable in methods and applications. Obsolete terms and usages have been discarded; definitions, rules, and principles are clearly and briefly stated; the examples are abundant, varied, and practical; the "Synopsis for Review" presents to the eye a clear outline of the topics studied and their relation to each other, and affords a most admirable and efficient means of drill and examination; the use of the equation and of the parenthesis is valuable not only as an arithmetical drill, but in familiarizing the pupil with algebraic symbols. *Percentage* is full and practical in its applications, and so far as we can determine conforms to all the recent changes made in financial and commercial operations. Under the head of *Measurements*, and of *Mensuration* we notice much that will be new and of value to the industrial trades. The work seems eminently practical in all its parts, and it must enable the teacher and pupil to accomplish greater *results* in a given time than other arithmetics now in use. This work is also issued in TWO PARTS, so that pupils in graded schools, if they prefer, may use Part I in the lower grades, and then go on with Part II in the higher grades, without a repetition of what should be already familiar to them.

NOR have I very much hope for the improvement of teachers who fancy that they know so much about the business that there is no occasion for their reading professional works, or catching the spirit of progress from the pages of educational journals, or the proceedings of educational conventions—who disdain teachers' institutes, and begrudge any time they may be required to devote thereto.—A. T. WILES in *Annual Report.*

OBITUARY RECORD.

PROF. INCREASE A. LAPHAM, the distinguished scientist, who died on Tuesday, Sept. 21, was born at Palmyra, N. Y., March 7, 1811. Early in life he became a civil engineer. The Welland, Miami, and Ohio Canals were under his supervision. In 1827, he went to Louisville, and there wrote an account of the canal around the Falls of the Ohio, at that city. From 1833 to 1835, the office of Secretary of the Ohio Canal Commissioners, at Columbus, afforded him considerable leisure, which was devoted to scientific pursuits. He began there the collection of his large herbarium. In 1836, he removed to Milwaukee, Wis., which he made his home, holding there several municipal and other offices. His "Wisconsin: Its Geography and Topography, History, Geology, and Mineralogy," was published in 1844, and during the following year appeared his geological map of Wisconsin, compiled from his own observations. In the seventh volume of the "Smithsonian Contributions to Knowledge" will be found his "Antiquities of Wisconsin." His contributions to scientific periodicals were numerous. He first discovered that there is a slight lunar tide on Lake Michigan. The present system of weather probabilities was partially devised by him, and, in concert with the Hon. Henry E. Paine, he advocated and framed the law establishing the Signal Office.

OLIVER R. STEELE, the well-known office-lawyer, who died in September, was born at Newington, Conn., in 1828, and graduated at Trinity College, Hartford, Conn. Although best known as a lawyer, he was for many years a successful teacher at Harlem, N. Y.

PROF. CHAUNCEY WRIGHT, Instructor of Physics in Harvard College, died Sunday, Sept. 19. He was born at Northampton, Mass., and graduated at Harvard in 1852. Until within four or five years, he has been engaged on the "United States Almanac." His contributions to the *North American Review*, *Nation*, and N. Y. *Evening Post* have been read by the scientific world. In the Agassiz School, at Cambridge, he was once the lecturer on metaphysics. For the last two years, he has been one of the champions of Darwinism in this country.

FOREIGN EDUCATIONAL INTELLIGENCE.

THE Free University of Paris, which is to be established by the Roman Catholic Church, under the provisions of the new educational law, will be opened in November. It will comprise schools of law, letters, and science.

DR. SHAW, Fellow of Trinity College, Dublin, proposes the establishment of a school of journalism in Dublin University.

THE (London) *National Schoolmaster* says: "It costs more to educate a scholar under the School-board system than under the Denominational system. Church schools, British schools, and Wesleyan schools can educate their scholars for thirty shillings a head. Roman Catholics schools can do it for three shillings less. In Board schools it costs thirty-five shillings a head.

THERE is some probability that the proposed Professorship of Chinese will be established at Oxford, England. The university authorities are willing to maintain such a professorship during the lifetime of Dr. Legge, who is proposed as the first occupant of the chair; but the committee of Chinese merchants and others wish to found a permanent chair, and offer to contribute a large part of the necessary funds.

THE *Siberia* says that the new Governor-General of Western Siberia has sent in a report to the Russian Government declaring the urgent necessity of judicial reform in the province, and, above all, of the creation of a university. Men, he says, cannot be had capable of discharging the duties of numbers of posts in the public service. There is, especially, a want of doctors, of whom, it is said, there are but fifty in all Siberia. The Minister of Finance approves of the proposal, and is disposed to grant 250,000 roubles for the foundation of the university, which, it is intended, shall be of two Faculties, law and medicine, and to be located at Tornsk.

THE Belgian Government has, quite recently, followed the example set by France, in appointing a practical school teacher or Cantonal Inspector of Schools. A few years ago the wish to see measures of this kind becoming gradually more

general was naively formulated as follows by a Swiss Teachers' Association: "That it be deemed expedient to henceforth appoint some inspectors of schools who have a knowledge of education."

IN Denmark, the Minister of Public Worship and Instruction has finally opened the doors of Copenhagen University to the ladies.

THE United States Minister at Stockholm states that 30,000 pupils study horticulture or forest culture in the common schools of Sweden.

EXPERIMENTS on the height and weight of boys fourteen years of age, in two groups of English schools, showed that the boys in the country group were about one and one-quarter inches taller and seven pounds heavier than those in the town schools. The difference in height was due in about equal degrees to mere retardation and to total suppression of growth.

A NOTE from Japan says: It is the intention of the Mom Bu Sho, or Department of Education, to be well represented at the Centennial Exposition in Philadelphia. Hitherto, in Japan, the studies of the college and language-school have been conducted in three languages, English, French, and German. Hereafter, the English language only is to be taught in the college; French and German to be taught to a limited number of students, who are to be as interpreters. It is estimated by the Department of Education that the number of children between the ages of six and thirteen, throughout the empire, now attending school, is 3,598,956.

Frazer's Magazine has an article on the "Immorality in English Universities," from which we clip the following: "Our own universities, and many of those on the Continent, have been or are so bad, in every moral point of view, that the whole question most justly demands serious inquiry. Are universities necessarily foci of immorality to young men? Are they worse than the mixed world into which most parents must intrust their children at that critical age? If they *are* so, I must add my vote on the side of the mothers against the fathers, and prefer, for the majority, local establishments, which will allow the students to live at their parents' homes, in spite of the great intellectual disadvantages.

GIFTS AND LEGACIES.

MRS. ANN J. WALLACE, of Kentucky, has given $2,000 to the Theological Seminary of the Associate Reformed Synod of the South, and $1,000, the interest of which is to be used for aged or disabled ministers.

BROWN UNIVERSITY has completed its $7,000 library building.

A NEW subscription fund of $300,000 is collecting for the endowment of Boston University.

MR. PORTER, a member of the class of 1875, of the College of New Jersey, in Princeton, has given $1,000 to the college navy.

IN accordance with the wish of the late President Jackson, of Trinity College, Hartford, Conn., his library has been presented to that college.

MRS. SAMUEL WILLISTON has given to the institution bearing her name, the Williston homestead, of fifteen acres, which are valued at $50,000.

THE death of Mr. Ralston, who was Treasurer of California University, has not affected that institution, it being protected by a bond for $150,000.

ABEL MINARD has left $100,000 to Drew Theological Seminary in New Jersey, with which to establish a professorship for the purpose of giving women a theological education.

HON. HANNIBAL HAMLIN has subscribed $1,000 to the Academy Endowment Fund of Colby University, the same to be applied to the purchase of a library for Hebron Academy.

WILLIAM CARPENTER, of Evansville, Ind., has filed articles for the endowment of a great educational institution, to be established in that city. The deeds will settle $500,000 on the institution, and Mr. Carpenter declares that after it shall have been established, he will make a further gift of $200,000. Mr. Carpenter is an old man with a small family. His wealth is estimated at $2,000,000.

CHANGES IN THE EDUCATIONAL FIELD.

MR. WM. H. PARKER has been appointed President and Mathematical Professor of Maryland Agricultural College.

DR. BLACK, formerly President of Iowa State University, has accepted the Presidency of the University at Wooster, Ohio.

THE Rev. Lewellen Pratt, of North Adams, Mass., has been appointed to the professorship of English Literature at Williams.

THE University of Pennsylvania has established a musical professorship, the first occupant of the chair being Mr. Hugh A. Clarke.

REV. ALEXANDER MARTIN, D.D., for several years past President of West Virginia University, has accepted the Presidency of Indiana Asbury University.

DR. LEMUEL MOSS, late President of the Chicago University, has been elected to a similar position in the Indiana State University at Bloomington, at a salary of $3,700 per year.

MR. JOHN W. LANGLEY, once Professor of Chemistry in the Naval Academy at Annapolis, in Antioch College, and in the University of Pittsburgh, will now hold the same position in Michigan University.

REV. DR. BUCKLAND, Professor of Church History in Rochester Theological Seminary, has resigned, on account of illness, and his chair has been accepted by the Rev. Howard Osgood, of Flushing, L. I.

THE Chair of Mathematics in Vanderbilt University has been filled by the election of Professor W. Leroy Brown, of the University of Georgia. The Theological Department will be conducted by Rev. John C. Granbery, D.D., of Richmond, Va.

MR. C. A. GRAVES, of Bedford Co., Va., has accepted the Chair of Common and Statute Law in the Law School of Washington and Lee University.

PROF. YOUNG, of Dartmouth, will, during the coming year, fill the chair of "Lecturer on Astronomy" at Williams.

CLARENCE A. WALDO, A.B., has assumed the Department of Natural Science at Drew Female Seminary, Carmel, N. Y.

MRS. MARY FIELDS has resigned the Principalship of the Chicago Female College, Washington Heights, and will devote herself to literature.

ALFRED C. TRUE, A.B., son of Rev. Dr. True, has been appointed teacher of Latin and Greek in the Massachusetts Normal School, at Westfield, Mass.

PROF. M. STUART PHELPS, for some time past connected with Yale College, accepts the professorship of Intellectual Philosophy in Middlebury College, and will enter upon his duties at the beginning of the winter term.

THE Kentucky Military Institute has a teacher in charge of its Department of Languages, who will instruct students in any one of nineteen languages they elect. The list does not include French and German, of which hundreds of competent teachers are to be found; but Sanskrit, Anglo-Saxon, Hebrew, Syriac, Persian, etc.

THE Board of Overseers of Harvard have made the following appointments: Oscar Faulhabel, tutor in German, for three years; Allen Walter Gould, A.B., tutor in Latin and Greek, for three years; Charles Edward Hamlin, A.M., instructor in Geography and Geology, for one year; Nathaniel Ware Hawes, assistant professor of Operative Dentistry, for five years; Geo. Frederic Holmes Markoe, instructor in Materia Medica, for one year; Frank Winthrop Draper, M.D., lecturer on Hygiene, for one year.

MR. FREDERICK PERRY, the oldest graduate of Williams College, died at Stockbridge, Mass., Sunday, Sept. 15, aged 97 years. He was born at Harwinton, Conn., in 1778, and entered college, after taking a preparatory course under his father, the Rev. David Perry. He became the Principal of Williamstown Academy in 1804, and a tutor in college the year following. The greater part of his life has been devoted to business.

COLLEGE INTELLIGENCE.

OF our present colleges, only eleven were existing at the time of the Declaration of Independence: Harvard, William and Mary, Yale, Princeton, University of Pennsylvania, Columbia, Brown University, Dartmouth, Rutgers, Hampden Sidney College, and Washington and Lee University. Of schools of theology, there was not one, the oldest bearing the date 1791. The first law school established was at Harvard in 1807.

IN Michigan University there seems to be a serious misunderstanding between the homœopathic and allopathic professors.

THE name of "Towne Scientific School" has been given to the scientific department of the University of Pennsylvania, in honor of the bequest of about $1,000,000, left to the university by the late John H. Towne.

SOME of the students of New England colleges have been at the springs during last summer as waiters. Several from Brown University were at seaside resorts as waiters and gardeners. This course has been justly commended.

CAPT. OSTRAM, of Cornell University, has already begun to coach a crew for the Regatta of 1876, and the Ithaca *Journal* intimates that the boating world may meet with another surprise, if the "ivy-entwined colleges" do not get to work.

THE faculty of Yale have recently issued the following decision: "Resolved, That no member of the present Freshman class, nor of future Freshman classes, shall become a member of the present Sophomore secret societies; nor shall any secret society hereafter be formed or exist in the Sophomore class.

"A PRESBYTERIAN University for the Northwest" is to be established at Lake Forest, a place a few miles north of Chicago, where a Young Ladies' Seminary and Boys' Academy have been successfully at work. Rev. Dr. R. W. Patterson will be president, Rev. J. H. Taylor will be the professor of English literature and language, and Prof. J. H. Hewit will teach the ancient languages.

THE university of Cambridge has conferred 595 degrees during the past academical year.

THE corner-stone of the Colorado State University was laid at Boulder, September 20, under a chilling snow-storm.

BOTH Harvard and Williams now require Sophomores to sign pledges that they will obey the laws of the college, and refrain from "hazing."

A NEW college of pharmacy is proposed in Boston. Money has already been pledged, and the nucleus of a library of standard chemical and pharmaceutical books has been obtained. The instruction given therein is intended to be particularly practical.

WELLESLEY COLLEGE for Women opened with 300 students, the full number which the institution can accommodate. There were 500 applications for admission received, besides the number applying for entrance in 1876–7. More than fifty pupils intend to study Greek. The cost of the college is said to be about $2,500,000.

THE following appointments for the next inter-collegiate contest in this city have been made by the authorities of Hamilton College: Orators, Julien M. Elliot, New York; Charles Kirkland Seward, Utica. Mathematical competitors, James Fairbairn Brodie, Hammond; Archibald L. Love, East Saginaw, Mich.

LAFAYETTE COLLEGE has a class of 81 new students. The Freshman class at Union will number about 90. Wesleyan University (Conn.) has the largest Freshman class of its existence. Williams has 50 Freshmen; Kansas University has 100; Dartmouth, 107; and Hamilton, 70. The University of California has 231 students enrolled. The Mass. Agricultural College has one female pupil.

THE Porter Scholarship, for the best entrance examination, at Amherst, has been awarded to Charles B. Goold, of the Albany Academy. The Seniors of Amherst Agricultural College have been given military subjects upon which to write essays, to be read before the battalion, during the winter term. One also relating to the military future of America. The best essay to be rewarded with a prize of money, offered by Lieut. C. A. L. Totten.

SMITH COLLEGE, NORTHAMPTON, MASS.—The first term of this institution, designed for the higher education of young women, opened with encouraging prospects on the 9th of September.

The founder of the institution, Miss Sophia Smith, was a noble New England woman, richly endowed with rare qualities of mind and heart. She lamented the want of that education which in her youth was so scantily provided for women. Out of this life-long regret there sprang the determination to give to others those advantages which she herself had been denied. After many liberal gifts, bestowed during her life, this benevolent purpose embodied itself, at her death, in the bequest of a sum of money, now amounting to half a million of dollars, to found an institution whose object should be, as stated by herself, "to furnish young women the means and facilities for an education equal to those which are afforded in our colleges for young men."

The idea that this is to be distinctly a college for women has moulded and modified all the plans and arrangements connected with it, from the beginning, extending even to the structure of the buildings, which are designed with special regard to the health and needs of students. Since there is no preparatory department connected with the institution, it is relieved of much that would otherwise embarrass its workings, and is left free to devote its whole resources and energies to the instruction of those who are prepared by previous study to receive mental culture.

VANDERBILT UNIVERSITY, at Nashville, Tenn., was dedicated with the usual ceremonies, October 4. Sermons were preached by Bishops Daggett and Wightman, and addresses delivered by Chancellor Lipscomb, of Georgia, and by Governor Porter, of Tennessee. In the governor's welcome to the heads of the Church, the faculty, students, and patrons of education from abroad, he expressed regret that he could not address him whose name the university bears, and whose munificence has given it life. The faculty and guardians of the new institution were enjoined to make it more than a place where academical instruction is imparted. "It must be more than a school for the training of candidates for the three learned professions. Steam and electricity are driving us forward with

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a tremendous force, and to meet the demands of the hour, you who are charged with the administration of this great trust must, as I believe you will, make it a universal school, in which are taught all branches of learning. A *studium general et universitas studii generalis*, where architects, chemists, engineers, farmers, and miners can be educated, and where original inquiries and investigations are stimulated."

Rev. Charles F. Deems, D.D., of New York city, made the dedicatory speech. Taking "Science and Religion" for his subject, he endeavored to prove that the latter should not take haughty and undue precedence of the former, and that there is no actual conflict between them.

The university was organized in January, 1873, as the Central University of the Methodist Episcopal Church, South. In March of that year, Mr. Cornelius Vanderbilt made a donation to the institution of $500,000. Since $1,000,000 were deemed necessary to establish and maintain a first-class university, the trustees decided to raise $500,000 by subscription. Mr. Vanderbilt's gift supplied what would have taken years to collect in the South, and in gratitude the trustees named the institution in his honor.

The university buildings are situated about one mile to the west of the city, on elevated ground, containing seventy-four acres. The work on the foundation was begun September 15, 1873, and a commodious and imposing edifice is now completed. It is made of brick, with white stone trimmings. The shape of the building is cruciform, the eastern and western wings being 133 feet in length, and the northern and southern wings 176 feet. On the first floor are the rooms of the faculty, offices of the professors, and lecture rooms. In the second story are the chapel, library, recitation rooms, etc. Two society halls, the museum, and a lecture room are on the third floor. The furniture is manufactured specially for the university by J. W. Schermerhorn & Co., of New York.

As now organized, Landon C. Garland, LL.D., is Chancellor of the university and head of the Department of Philosophy, etc.; Dr. Summers is head of the Biblical Department; Thomas H. Malone is Dean of the Faculty of the Law Department; and Thomas Menees, M.D., is Dean of the Faculty of the Medical Department.

CATALOGUES AND PAMPHLETS RECEIVED.

The Cornell University Register and Catalogue. Hon. Andrew D. White, LL.D., President; fifty-one professors; five hundred and thirty students; both sexes.

Washington and Lee University, Lexington, Va. Gen. G. W. Custis Lee, President; seventeen professors.

William Jewell College, Liberty, Mo. Rev. W. P. Seaman, D.D., Chancellor; ten professors; one hundred and thirty-five students.

Ohio University, Athens, O. Rev. Wm. H. Scott, A.M., President; seven professors; one hundred and thirteen students.

Drury College, Springfield, Mo. Nathan J. Morrison, D.D., President; eleven professors; two hundred and twenty-five students.

Knox College, Galesburg, Ill. A pamphlet contains the inaugural ceremony of Hon. Newman Bateman, LL.D., as President; eleven professors.

Antioch College, Yellow Springs, O. The faculty numbers six, of which there is at present no president. Number of students one hundred and thirty-one; both sexes.

Eminence College, Eminence, Ky. W. S. Giltner, President; seven instructors; one hundred and twenty-six students; both sexes.

Beloit College, Beloit, Wis. Rev. A. L. Chapin, D.D., President; eleven professors; one hundred and ninety-five students.

Pacific Methodist College, Santa Rosa, California. A. L. Fitzgerald, A.M, President; eight professors; twenty-five students.

University of Vermont and State Agricultural College. Matthew H. Buckham, A.M., President; twenty-one professors.

Emory and Henry College, Marion, Va. Rev. E. E. Wiley, D.D., President; seven professors; one hundred and seventy-six students.

Fort Plain Seminary and Collegiate Institute, Fort Plain, N. Y. Rev. A. Mattice, A.M., Principal; one hundred and sixty-three pupils.

The Pawling Institute, Pawling, N. Y. R. A. Jacobs, Principal; sixty-eight pupils.

Lake Geneva Seminary, Walworth, Wis. Mrs. Julia A. Warner, Principal; eighty-five students.

Peekskill Academy, Peekskill, N. Y. Charles J. Wright, A.M., and Robert Donald, A.M., Principals; fifty-three students.

Forrestville Free Academy, Forrestville, N. Y. O. E. Branch, A.B., Principal; four hundred and sixty students.

Episcopal Female Institute, Winchester, Va. Rev. J. C. Wheat, D.D., Principal.

Susquehanna Collegiate Institute, Tonawanda, Pa. Edwin E. Quinlan, Principal; one hundred and sixty-nine students.

Rockford Seminary, Rockford, Ill. Rev. Joseph Emerson, President; two hundred and eight students.

Troy Conference Seminary, Poultney, Vt. Rev. M. E. Cady, A.M., Principal; one hundred and ninety-five students.

Wesleyan Academy, Wilbraham, Mass. Rev. Nathaniel Fellows, A.B., Principal; five hundred and thirty-eight students.

Preparatory Scientific School, No. 1,267 Broadway. Prof. Alfred Colin, M.E., Director.

Allen's Academy, Chicago, Ill. I. W. Allen, LL.D., Principal; eighty-eight students.

South Berkshire Institute, Marlboro', Mass. B. F. Parsons, A.M., Principal; two hundred and nineteen students.

Brantford Young Ladies' College, Brantford, Ontario. Rev. William Cochrane, D.D., President; one hundred and twenty-four students.

Thirty-first Annual Register and Announcement of the Virginia Female Institute, Staunton, Va. Rev. R. H. Phillips, A.M., Principal; two hundred and eighty-nine students.

Catalogue of Potomac Academy, Alexandria, Va. Charles S. Taylor and John S. Blackburn, Principals; fifty students.

Williamston Female College, Charleston, S. C. Rev. Samuel Lauder, A.M. President; one hundred and nineteen students.

Kenmore Hall School for Boys, Richmond, Mass. Jared Reid, A.M., Principal.

Fifty-fifth Annual Report of the Directors and Officers of the American Asylum for the Deaf and Dumb, Hartford, Ct. Edward C. Stone, A.M., Principal; two hundred and seventy pupils.

Park High School, Tuskegee, Alabama. James F. Park, A.M., Principal; one hundred and three students.

Salem Academy, South Salem, O. Thomas J. Dague, A.M., Principal; ninety-one students.

Principals and School Officers are requested to send their Catalogues, as soon as published, to THE AMERICAN EDUCATIONAL MONTHLY.

PUBLISHER'S' DEPARTMENT.

A Timely Discourse on School Apparatus, in circular form, showing a practical way of meeting some of the wants of the school-room, is now in preparation and will be ready by November 1. It will be mailed to any address on application, with stamp. Address J. W. Schermerhorn & Co., 14 Bond Street, N. Y.

The Art of Reading Music, by Mrs. L. B. Humphreys, is meeting with enthusiastic approval wherever Mrs. Humphreys has tested its use with a class in the school-room. Her system is natural and most successful. It will enable pupils to learn to read music at sight, as readily as they learn to read the first lessons of their primers. The day is not distant when Mrs. Humphreys' plan will be recognized as revolutionizing the teaching of music in our schools. (See Advertisement in this MONTHLY.)

All interested in improved modes of Teaching Latin will do well to send their addresses to Box 3,445, New York P. O. A new and interesting pamphlet will be mailed on receipt of four cents to prepay postage.

Voices of the Press on Whitney's Elements of English Grammar.—"Its definitions of the parts of speech are admirable, its illustrations are fresh and apposite."—*Baptist Weekly*, Oct. 10.

"The author has banished that baseless fiction called the 'Potential Mood,' which so long held unlawful sway in the science."—*The Churchman*, Oct. 2.

"His book is small, well-arranged, and simple as need be."—*Golden Age*, Sept. 25.

"Mr. Whitney's book seems to us the best attempt at supplying the elements of English grammar which has come under our notice. The arrangement is simple, and apparently exhaustive as an outline. Every necessary assistance is given both to the pupil and to the teacher in the way of examples, exercises, and questions."—*Illustrated Weekly*, Sept. 28.